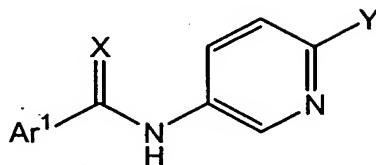


WHAT IS CLAIMED IS:

1. A compound having the formula:



wherein,

Ar¹ is a member selected from the group consisting of aryl, substituted aryl, heteroaryl and substituted heteroaryl;

X is a member selected from the group consisting of O, S and N-R¹,

wherein, R¹ is a member selected from the group consisting of H,

(C₁-C₈)alkyl, substituted (C₁-C₈)alkyl, heteroalkyl, substituted

heteroalkyl, aryl, substituted aryl, heteroaryl, substituted

heteroaryl, aryl(C₁-C₄)alkyl, substituted aryl(C₁-C₄)alkyl, C₁-C₄

-C(O)R², -OR³, -C(O)NR³R⁴, and -S(O)₂NR³R⁴;

wherein, R² is a member selected from the group

(C₁-C₈)alkyl, substituted (C₁-C₈)alkyl, cycloalkyl,

substituted cycloalkyl, heteroalkyl, substituted het-

heterocyclyl, substituted heterocyclyl, alkaryl, substituted

aryl, heteroaryl, substituted heteroaryl, aryl(C₁-C₄)alkyl and

substituted aryl(C₁-C₄)alkyl;

\mathbb{R}^4 are each members indepen-

R^3 and R^4 are each members independently selected from the group

consisting of hydrogen, (C₁-C₈)alkyl, substituted

(C₁-C₈)alkyl, cycloalkyl, substituted cycloalkyl,

heteroalkyl, substituted heteroalkyl, heterocyclyl,

substituted heterocyclyl, aryl, substituted aryl, heteroaryl

substituted heteroaryl, aryl(C₁-C₄)alkyl and substituted

aryl(C₁-C₄)alkyl, or R³ and R⁴ can be combined with the

nitrogen to which each is attached to form a 5-, 6- or

7-membered ring optionally having additional hetero

at the ring vertices; and

member selected from the group consisting of

1 2. The compound according to claim 1, wherein Ar¹ is a member
2 selected from the group consisting of phenyl, substituted phenyl, indolyl, substituted
3 indolyl, benzofuranyl, substituted benzofuranyl, furanyl, substituted furanyl, thienyl,
4 substituted thienyl, isothiazolyl, substituted isothiazolyl, pyrazolyl and substituted
5 pyrazolyl.

1 3. The compound according to claim 2, wherein Ar¹ is a member
2 selected from the group consisting of substituted phenyl, substituted or unsubstituted 2-
3 indolyl and substituted or unsubstituted 2-thienyl.

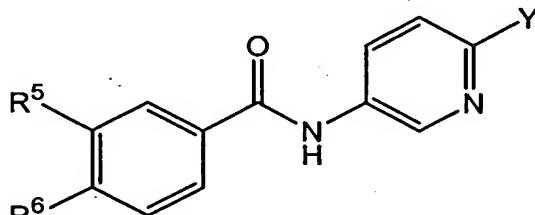
1 4. The compound according to claim 3, wherein X is O.

1 5. The compound according to claim 3, wherein the Ar¹ substituents
2 are selected from the group consisting of halogen, alkyl, halo(C₁-C₄)alkyl, (C₁-C₄)alkoxy,
3 halo(C₁-C₄)alkoxy, nitro, cyano, -NR⁷C(O)R⁸, -NR⁷R⁸, phenyl and substituted phenyl,
4 wherein

5 R⁷ and R⁸ are members independently selected from hydrogen,
6 (C₁-C₈)alkyl, substituted (C₁-C₈)alkyl, cycloalkyl, substituted
7 cycloalkyl, heteroalkyl, substituted heteroalkyl, heterocyclyl,
8 substituted heterocyclyl, aryl, substituted aryl, heteroaryl,
9 substituted heteroaryl, aryl(C₁-C₄)alkyl and substituted
10 aryl(C₁-C₄)alkyl, or R⁷ and R⁸ taken together with the nitrogen to
11 which each is attached form a 5-, 6- or 7-membered ring optionally
12 having additional heteroatoms at the ring vertices.

1 6. The compound according to claim 2, wherein Ar¹ is substituted
2 phenyl.

1 7. The compound according to claim 6, having the formula:

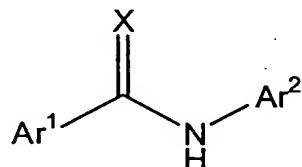


2 wherein,

4 R⁵ and R⁶ are members independently selected from the group consisting
5 of H, halogen, substituted or unsubstituted alkyl, halo(C₁-C₄)alkyl, nitro, cyano and
6 substituted or unsubstituted phenyl, with the proviso that both R⁵ and R⁶ are not H.

1 8. The compound according to claim 7, wherein R⁵ and R⁶ are
2 members independently selected from the group consisting of H, F, and Cl, with the
3 proviso that both R⁵ and R⁶ are not H.

1 9. A method of increasing ion flow through voltage-dependent
2 potassium channels in a cell, said method comprising contacting said cell with a
3 potassium channel-opening amount of a compound of the formula:



5 wherein

6 Ar¹ and Ar² are each members independently selected from the group
7 consisting of aryl, substituted aryl, heteroaryl and substituted
8 heteroaryl; and

9 X is a member selected from the group consisting of O, S and N-R¹,
10 wherein R¹ is a member selected from the group consisting of H,
11 (C₁-C₈)alkyl, substituted (C₁-C₈)alkyl, aryl, substituted aryl,
12 heteroaryl, substituted heteroaryl, aryl(C₁-C₄)alkyl, substituted
13 aryl(C₁-C₄)alkyl, CN, -C(O)R², -OR³, -C(O)NR³R⁴, and
14 -S(O)₂NR³R⁴;

15 wherein R² is a member selected from the group consisting of
16 (C₁-C₈)alkyl, substituted (C₁-C₈)alkyl, aryl, substituted aryl,
17 heteroaryl, substituted heteroaryl, aryl(C₁-C₄)alkyl and
18 substituted aryl(C₁-C₄)alkyl; and

19 R³ and R⁴ are each members independently selected from the group
20 consisting of hydrogen, (C₁-C₈)alkyl, substituted
21 (C₁-C₈)alkyl, aryl, substituted aryl, heteroaryl, substituted
22 heteroaryl, aryl(C₁-C₄)alkyl and substituted
23 aryl(C₁-C₄)alkyl, or R³ and R⁴ can be combined with the
24 nitrogen to which each is attached to form a 5-, 6- or

1 10. The method according to claim 9, wherein said voltage-dependent
2 potassium channel is responsible for the M-current.

1 **11.** The method according to claim 9, wherein said voltage-dependent
2 potassium channel comprises KCNQ subunits.

1 12. The method according to claim 9, wherein Ar¹ is a member
2 selected from the group consisting of phenyl, substituted phenyl, indolyl, substituted
3 indolyl, benzofuranyl, substituted benzofuranyl, furanyl, substituted furanyl, thienyl,
4 substituted thienyl, isothiazolyl, substituted isothiazolyl, pyrazolyl and substituted
5 pyrazolyl.

13. The method according to claim 9, wherein Ar¹ is substituted phenyl, substituted or unsubstituted 2-indolyl and substituted or unsubstituted 2-thienyl.

14. The method according to claim 9, wherein X is O.

1 15. The method according to claim 13, wherein the Ar¹ substituents are
2 selected from the group consisting of halogen, alkyl, halo(C₁-C₄)alkyl, (C₁-C₄)alkoxy,
3 halo(C₁-C₄)alkoxy, nitro, cyano, -NHC(O)R⁷, -NHR⁷, phenyl and substituted phenyl,
4 wherein

5 R⁷ is a member selected from hydrogen, (C₁-C₈)alkyl, substituted
6 (C₁-C₈)alkyl, cycloalkyl, substituted cycloalkyl, heteroalkyl, substituted heteroalkyl,
7 heterocyclyl, substituted heterocyclyl, aryl, substituted aryl, heteroaryl, substituted
8 heteroaryl, aryl(C₁-C₄)alkyl and substituted aryl(C₁-C₄)alkyl, or R⁷ can be combined with
9 the nitrogen to which it is attached to form a 5-, 6- or 7-membered ring optionally having
10 additional heteroatoms at the ring vertices.

1 16. The method according to claim 9, wherein Ar² is selected from the
2 group consisting of heteroaryl and substituted heteroaryl.

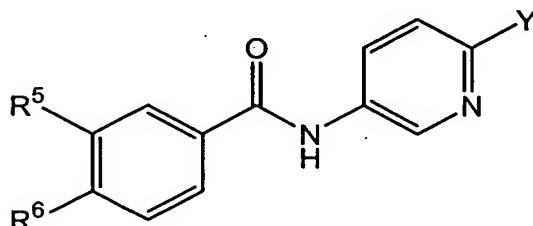
1 **17.** The method according to claim 9, wherein Ar¹ is substituted aryl;
2 Ar² is heteroaryl or substituted heteroaryl; and X is O.

1 **18.** The method according to claim 15, wherein Ar² is pyridyl or
2 substituted pyridyl.

1 **19.** The method according to claim 18, wherein Ar² is selected from
2 the group consisting of 6-methyl-3-pyridyl and 2-chloro-5-pyridyl.

1 **20.** The method according to claim 18; wherein Ar¹ is substituted
2 phenyl.

1 **21.** The method according to claim 20, said compound having the
2 formula:

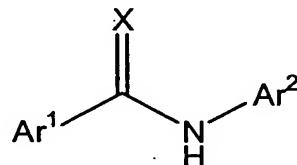


3 wherein,

5 R⁵ and R⁶ are members independently selected from the group consisting
6 of H, halogen, alkyl, halo(C₁-C₄)alkyl, nitro, cyano and phenyl, with the proviso that both
7 R⁵ and R⁶ are not H.

1 **22.** The method according to claim 21, wherein R⁵ and R⁶ are members
2 independently selected from the group consisting of H, F, and Cl, with the proviso that
3 both R⁵ and R⁶ are not H.

1 **23.** A method of treating a central or peripheral nervous system
2 disorder or condition through modulation of a voltage-dependent potassium channel, said
3 method comprising administering to a subject in need of such treatment, an effective
4 amount of a compound having the formula:



5 wherein

7 Ar¹ and Ar² are each members independently selected from the group
8 consisting of aryl, substituted aryl, heteroaryl and substituted
9 heteroaryl; and
10 X is a member selected from the group consisting of O, S and N-R¹,
11 wherein R¹ is a member selected from the group consisting of H,
12 (C₁-C₈)alkyl, substituted (C₁-C₈)alkyl, aryl, substituted aryl,
13 heteroaryl, substituted heteroaryl, aryl(C₁-C₄)alkyl, substituted
14 aryl(C₁-C₄)alkyl, CN, -C(O)R², -OR³, -C(O)NR³R⁴, and
15 -S(O)₂NR³R⁴;
16 wherein R² is a member selected from the group consisting of
17 (C₁-C₈)alkyl, substituted (C₁-C₈)alkyl, aryl, substituted aryl,
18 heteroaryl, substituted heteroaryl, aryl(C₁-C₄)alkyl and
19 substituted aryl(C₁-C₄)alkyl; and
20 R³ and R⁴ are each members independently selected from the group
21 consisting of hydrogen, (C₁-C₈)alkyl, substituted
22 (C₁-C₈)alkyl, aryl, substituted aryl, heteroaryl, substituted
23 heteroaryl, aryl(C₁-C₄)alkyl and substituted
24 aryl(C₁-C₄)alkyl, or R³ and R⁴ can be combined with the
25 nitrogen to which each is attached to form a 5-, 6- or
26 7-membered ring optionally having additional heteroatoms
27 at the ring vertices.

1 **24.** The method according to claim 23, wherein said disorder or
2 condition is selected from the group consisting of migraine, ataxia, Parkinson's disease,
3 bipolar disorders, spasticity, mood disorders, brain tumors, psychotic disorders,
4 myokymia, seizures, epilepsy, hearing loss, vision loss, Alzheimer's disease, age-related
5 memory loss, learning deficiencies, motor neuron diseases, and stroke.

1 **25.** The method according to claim 24, wherein said disorder or
2 condition is hearing loss.

1 **26.** The method according to claim 24, wherein said disorder or
2 condition is epilepsy or seizures.

1 27. The method according to claim 23, wherein Ar¹ is a member
2 selected from the group consisting of phenyl, substituted phenyl, indolyl, substituted
3 indolyl, benzofuranyl, substituted benzofuranyl, furanyl, substituted furanyl, thienyl,
4 substituted thienyl, isothiazolyl, substituted isothiazolyl, pyrazolyl and substituted
5 pyrazolyl.

1 28. The method according to claim 27, wherein Ar¹ is substituted aryl,
2 substituted or unsubstituted 2-indolyl and substituted or unsubstituted 2-thienyl.

1 29. The method according to claim 28, wherein X is O.

1 30. The method according to claim 28, wherein the Ar¹ substituents are
2 selected from the group consisting of halogen, alkyl, halo(C₁-C₄)alkyl, (C₁-C₄)alkoxy,
3 halo(C₁-C₄)alkoxy, nitro, cyano, -NHC(O)R⁷, -NHR⁷, phenyl and substituted phenyl,
4 wherein

5 R⁷ is a member selected from hydrogen, (C₁-C₈)alkyl, substituted
6 (C₁-C₈)alkyl, cycloalkyl, substituted cycloalkyl, heteroalkyl, substituted heteroalkyl,
7 heterocyclyl, substituted heterocyclyl, aryl, substituted aryl, heteroaryl, substituted
8 heteroaryl, aryl(C₁-C₄)alkyl and substituted aryl(C₁-C₄)alkyl; or R⁷ can be combined with
9 the nitrogen to which it is attached to form a 5-, 6- or 7-membered ring optionally having
10 additional heteroatoms at the ring vertices.

1 31. The method according to claim 23, wherein Ar² is selected from
2 the group consisting of heteroaryl and substituted heteroaryl.

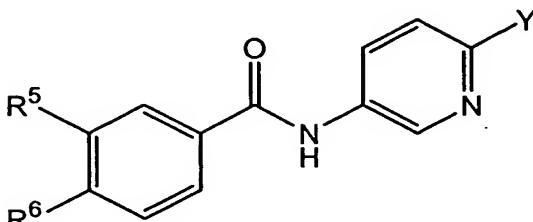
1 32. The method according to claim 23, wherein Ar¹ is substituted aryl;
2 Ar² is heteroaryl or substituted heteroaryl; and X is O.

1 33. The method according to claim 31, wherein Ar² is pyridyl or
2 substituted pyridyl.

1 34. The method according to claim 33, wherein Ar² is selected from
2 the group consisting of 6-methyl-3-pyridyl and 2-chloro-5-pyridyl.

1 35. The method according to claim 34, wherein Ar¹ is substituted
2 phenyl.

1 **36.** The method according to claim 35, said compound having the
2 formula:

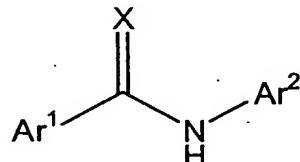


wherein,

5 R⁵ and R⁶ are members independently selected from the group consisting
6 of H, halogen, alkyl, halo(C₁-C₄)alkyl, nitro, cyano and phenyl, with the proviso that both
7 R⁵ and R⁶ are not H.

1 **37.** The method according to claim 36, wherein R⁵ and R⁶ are members
2 independently selected from the group consisting of H, F, and Cl, with the proviso that
3 both R⁵ and R⁶ are not H.

1 **38.** A composition comprising a pharmaceutically acceptable excipient
2 and a compound of the formula:



wherein,

5 Ar¹ and Ar² are each members independently selected from the group
6 consisting of aryl, substituted aryl, heteroaryl and substituted
7 heteroaryl; and

8 X is a member selected from the group consisting of O, S and N-R¹,
9 wherein R¹ is a member selected from the group consisting of H,
10 (C₁-C₈)alkyl, substituted (C₁-C₈)alkyl, aryl, substituted aryl,
11 heteroaryl, substituted heteroaryl, aryl(C₁-C₄)alkyl, substituted
12 aryl(C₁-C₄)alkyl, CN, -C(O)R², -OR³, -C(O)NR³R⁴, and
13 -S(O)₂NR³R⁴;

14 wherein R² is a member selected from the group consisting of
15 (C₁-C₈)alkyl, substituted (C₁-C₈)alkyl, aryl, substituted aryl,

1 39. The composition according to claim 38, wherein Ar¹ is substituted
2 aryl, substituted or unsubstituted 2-indolyl and substituted or unsubstituted 2-thienyl.

1 40. The composition according to claim 38, wherein X is O.

1 41. The composition according to claim 40, wherein the Ar¹
2 substituents are selected from the group consisting of halogen, alkyl, halo(C₁-C₄)alkyl,
3 (C₁-C₄)alkoxy, halo(C₁-C₄)alkoxy, nitro, cyano, -NHC(O)R⁷, -NHR⁷, phenyl and
4 substituted phenyl, wherein

5 R⁷ is a member selected from hydrogen, (C₁-C₈)alkyl, substituted
6 (C₁-C₈)alkyl, cycloalkyl, substituted cycloalkyl, heteroalkyl, substituted heteroalkyl,
7 heterocyclyl, substituted heterocyclyl, aryl, substituted aryl, heteroaryl, substituted
8 heteroaryl, aryl(C₁-C₄)alkyl and substituted aryl(C₁-C₄)alkyl, or R⁷ can be combined with
9 the nitrogen to which it is attached to form a 5-, 6- or 7-membered ring optionally having
10 additional heteroatoms at the ring vertices.

42. The composition according to 38, wherein Ar² is selected from the group consisting of heteroaryl and substituted heteroaryl.

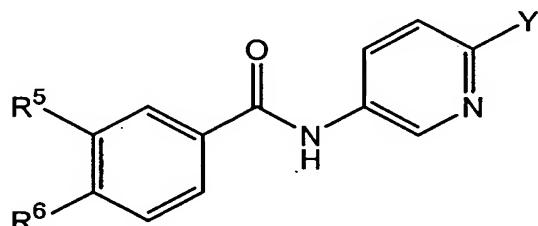
43. The composition according to claim 38; wherein Ar¹ is substituted
aryl; Ar² is heteroaryl or substituted heteroaryl; and X is O.

1 44. The composition according to claim 42, wherein Ar² is pyridyl or
2 substituted pyridyl.

1 **45.** The composition according to claim 44, wherein Ar² is selected
2 from the group consisting of 6-methyl-3-pyridyl and 2-chloro-5-pyridyl.

1 **46.** The composition according to claim 44, wherein Ar¹ is substituted
2 phenyl.

1 **47.** The composition according to claim 46, said compound having the
2 formula:



3 **wherein,**

4 R⁵ and R⁶ are members independently selected from the group consisting
5 of H, halogen, alkyl, halo(C₁-C₄)alkyl, nitro, cyano and phenyl, with the proviso that both
6 R⁵ and R⁶ are not H.
7

1 **48.** The composition according to claim 47, wherein R⁵ and R⁶ are
2 members independently selected from the group consisting of H, F, and Cl, with the
3 proviso that both R⁵ and R⁶ are not H.